More than an Advisory Committee

Engaging farmers in watershed improvement projects

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ISU Extension Watershed Projects
Wisconsin River Water Quality Improvement Symposium
February 14, 2014

The first follower is what transforms a lone nut into a leader.

– Derek Sivers at TED Feb 2010

Starting a movement

Develop incentive structure

Establish water monitoring

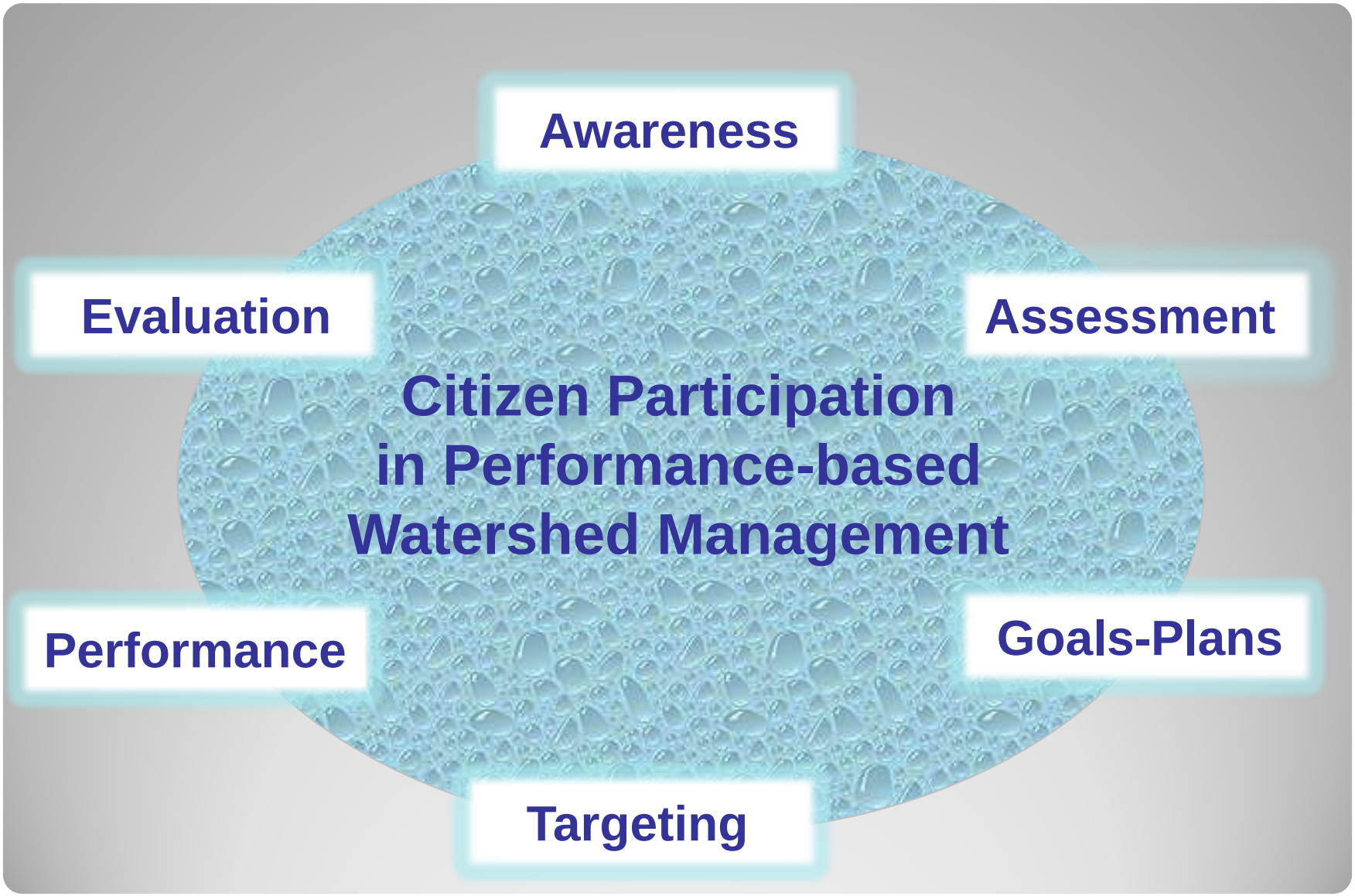
Set goals and evaluate progress

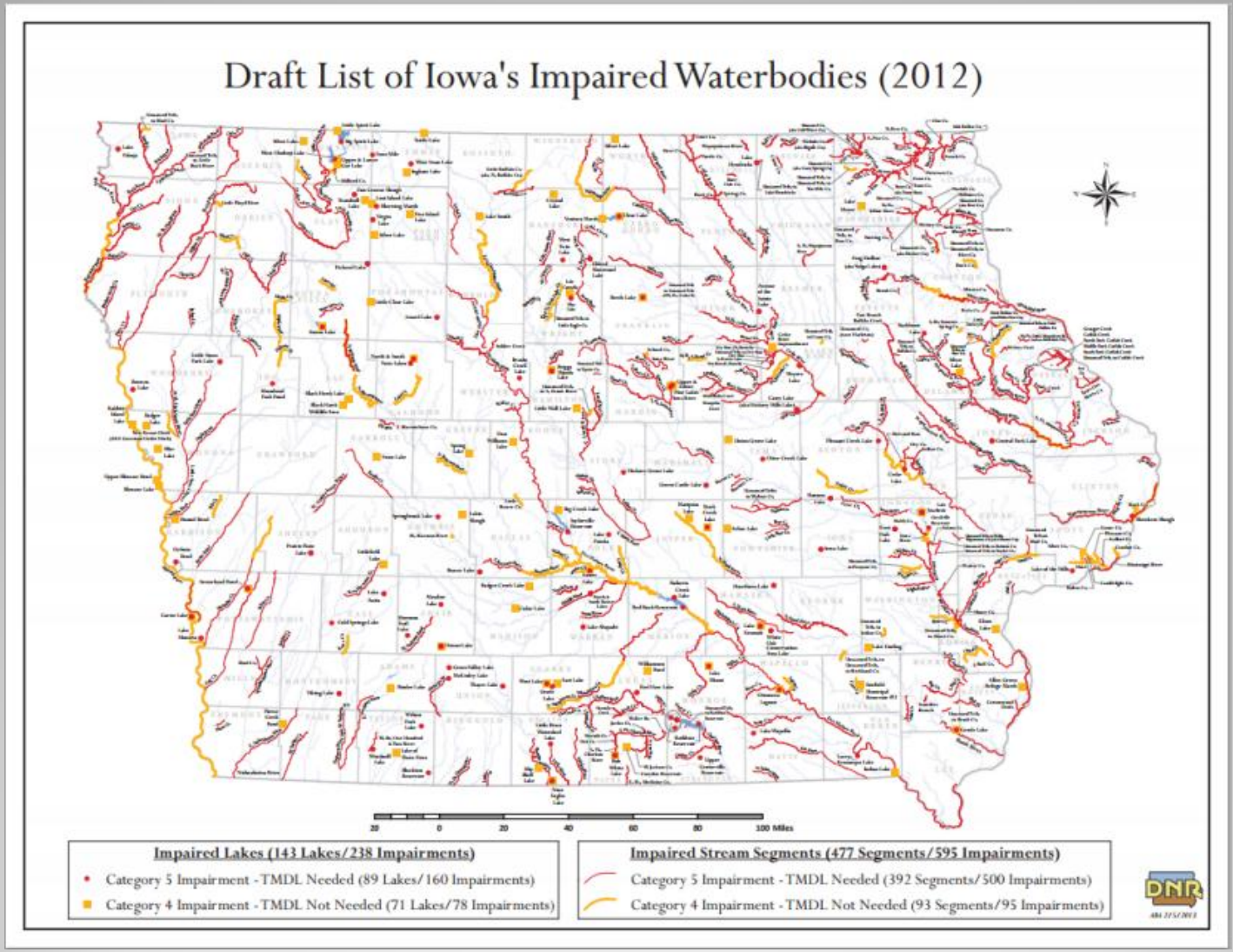
Use local data and outside resources

Regular meetings

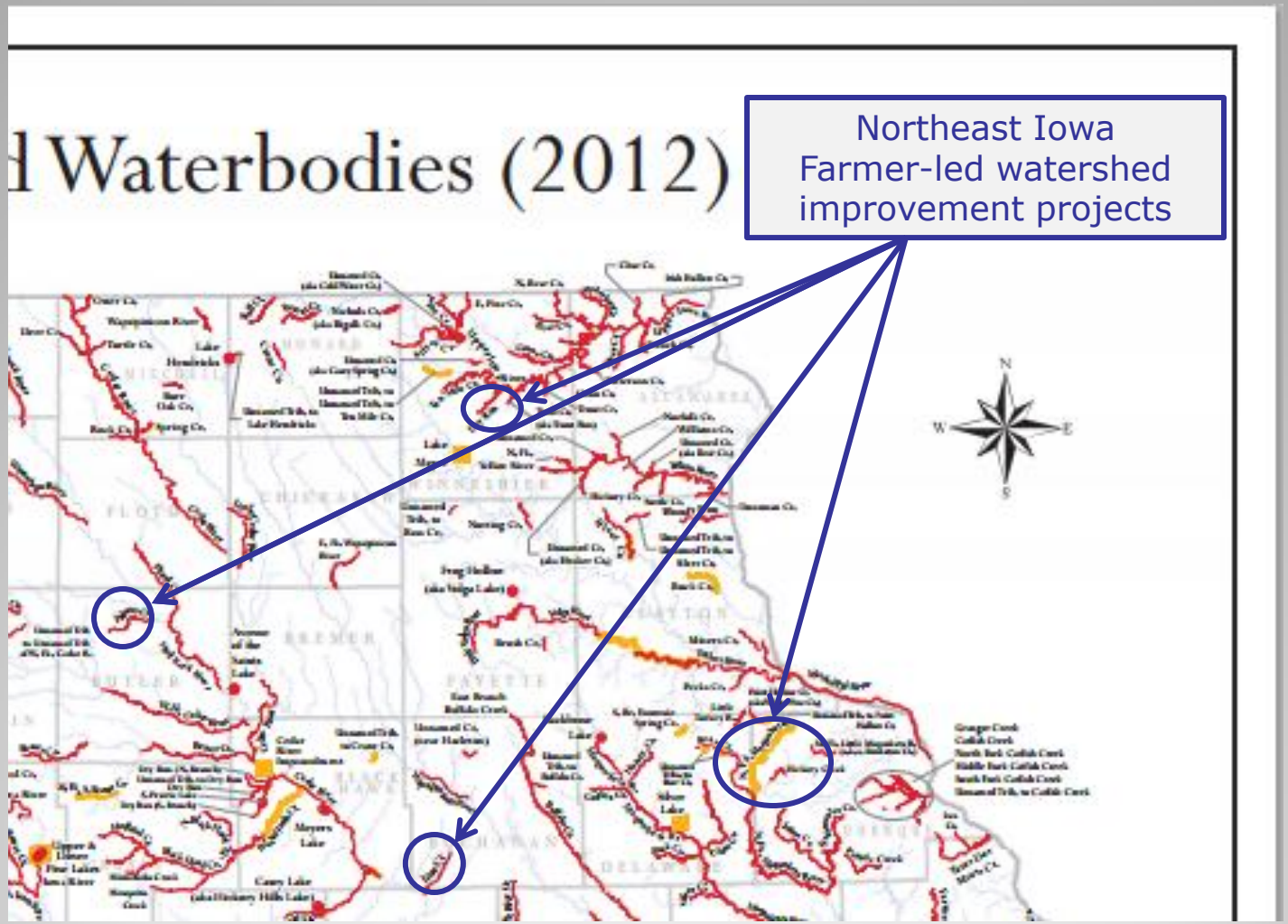
Non-profit status

Watershed Councils


Awareness
Assessment
Goals-Plans
Targeting
Performance
Evaluation
Citizen Participation
in Performance-based
Watershed Management

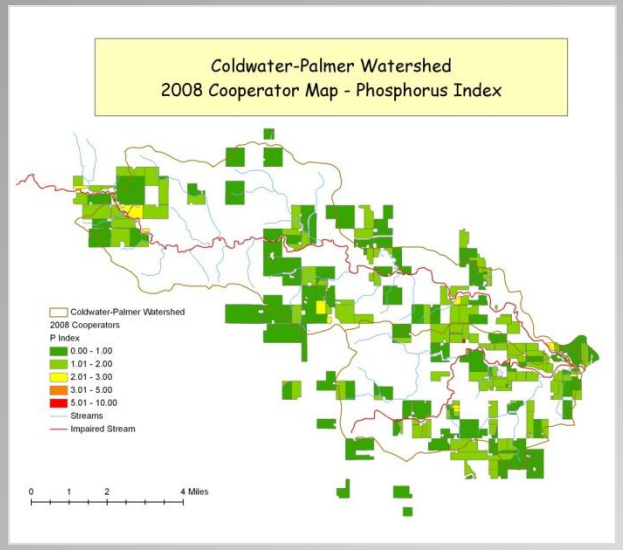

Draft List of Iowa's Impaired Waterbodies (2012)
20 0 20 40 60 80 100 Miles
Impaired Lakes (143 Lakes/238 Impairments)
Category 5 Impairment - TMDL Needed (89 Lakes/160 Impairments)
Category 4 Impairment - TMDL Not Needed (71 Lakes/78 Impairments)
Impaired Stream Segments (477 Segments/595 Impairments)
Category 5 Impairment - TMDL Needed (392 Segments/500 Impairments)
Category 4 Impairment - TMDL Not Needed (93 Segments/95 Impairments)
DNR

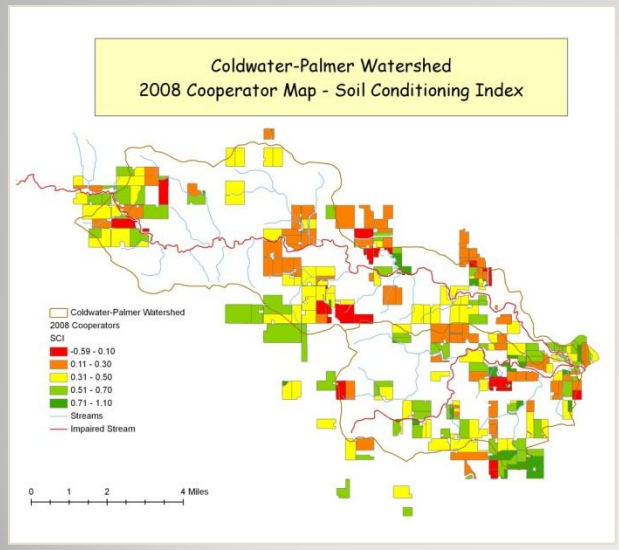
Awareness


Waterbodies (2012)
Northeast Iowa
Farmer-led watershed
improvement projects

Awareness

Assessment


Coldwater-Palmer Watershed
2008 Cooperator Map - Phosphorus Index
Coldwater-Palmer Watershed
2008 Cooperators
P Index
0.00 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 5.00
5.01 - 10.00
Streams
Impaired Stream
0 1 2 4 Miles


Coldwater-Palmer Watershed
2008 Cooperator Map - Soil Conditioning Index
Coldwater-Palmer Watershed
2008 Cooperators
SCI
-0.59 - 0.10
0.11 - 0.30
0.31 - 0.50
0.51 - 0.70
0.71 - 1.10
Streams
Impaired Stream
0 1 2 4 Miles


Pepsi

Assessment

Goals-Plans

Install 5 sub-subsurface denitrifying bioreactors in priority tile-drained fields

Install vegetative filter strips or seed cover crops on 20 fields receiving manure applications

Restrict livestock stream access or provide an off-stream watering source at 6 of 17 watershed locations where livestock currently access the stream

Reduce annual sediment delivery to North Fork River Headwaters by an additional 7,500 tons

Watershed participation rate of 85%

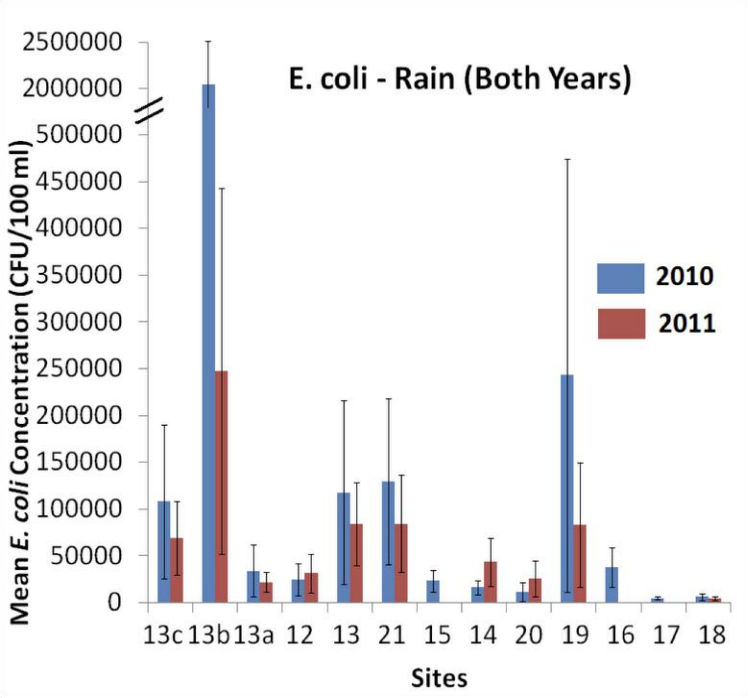
Watershed Averages: IPI - 2.00, SCI - 0.6, CNT - 2,000 ppm

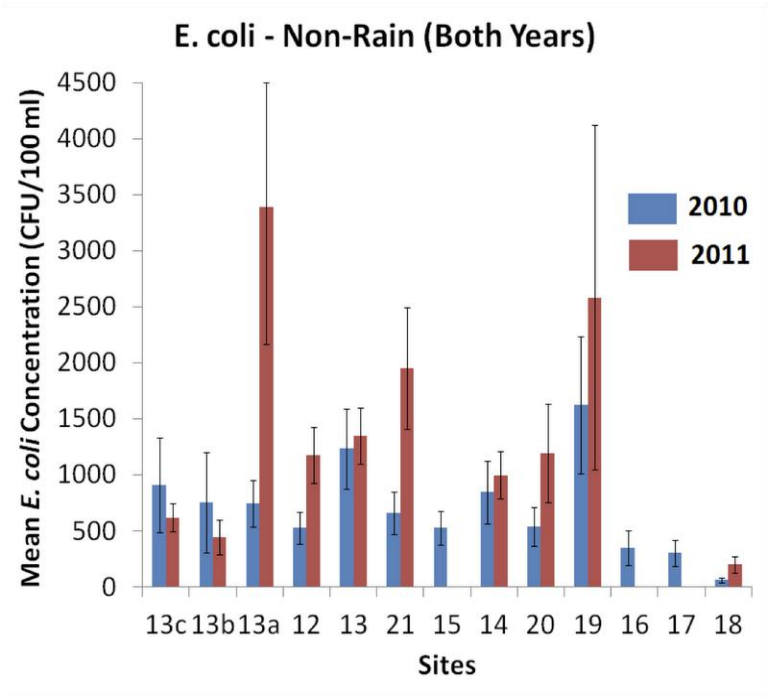
Goals-Benchmarks

Two consecutive years of season-long, rain event, average total phosphorus water analysis of less than 1.40 mg/L at monitoring site 3

A recreation season indicator bacteria (E. coli) geometric mean less than the Class A2 criterion of 630 orgs/100 ml at monitoring site DRC 19

Goals-Outcomes


E. coli - Rain (Both Years)
Mean E. coli Concentration (CFU/100 ml)
2500000
2000000
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
2010
2011
13c 13b 13a 12 13 21 15 14 20 19 16 17 18
Sites


E. coli - Non-Rain (Both Years)
Mean E. coli Concentration (CFU/100 ml)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
2010
2011
13c 13b 13a 12 13 21 15 14 20 19 16 17 18
Sites

Targeting

Hewitt Creek Watershed
Phosphorus Index Soil Conditioning Index Listing - 2012

FARM ID	FIELD ID	ACRES	P INDEX	SCI	SOIL TEST P	STREAM DIS	ROTATION	CONTOUR	NOTILL
51	11	4.4	8.72	0.82	535	200	CCOHH	N	
19	H6	10.0	8.34	0.12	248	3230	CCCOMMM	N	
41	4A	20.3	7.20	-0.04	145	800	CC	Y	
48	middle	43.4	6.34	-0.04	105	1290	CCCOAA		
15	2B	12.9	6.30	0.09	61	450	CCS	Y	
51	10	1.1	6.30	0.70	224	630	CCOHH	N	
31	5	6.6	5.84	0.56	148	480	CCOMMM	Y	
41	4B	9.5	5.82	0.42	145	185	CC	Y	
26	8	6.2	5.56	0.45	45	280	CCCOHHH	N	
30	N4	20.7	5.26	0.06	22	220	CS	Y	
26	7	6.4	5.21	0.27	58	990	CCCOHHH	N	
48	south	39.9	5.09	0.10	78	1180	CCCOAA		
6	R3	22.3	5.06	0.46	99	600	CCCOHHH	Y	
11	S1	62.1	4.97	-0.02	47	880	CCS	N	
13	1	37.4	4.96	0.37	105	330	CC	N	
23	H-east	67.6	4.87	0.45	277	1550	CC	N	
26	4	16.7	4.82	0.12	42	1770	CCCOHHH	N	
44	H-2	48.0	4.80	0.28	125	940	CC	Y	
18	5A1	7.3	4.72	0.16	47	610	CCOHHH	N	
6	R5	14.0	4.68	0.26	59	1110	CCCOHHH	N	
45	H-7	6.9	4.63	0.22	43	250	CCS	N	Y
15	6	3.1	4.63	0.43	50	430	CCOHHH	Y	
13	2	113.2	4.62	0.23	145	1090	CC	N	
15	7	2.6	4.62	0.43	90	1420	CCOHHH	Y	
43	1	32.4	4.53	0.00	32	1080	CC	Y	
37	2	18.8	4.46	0.45	99	1530	CCCOHHH	N	
35	W2	18.4	4.45	0.27	23	340	CCCOHHH	Y	
18	4A	13.4	4.43	0.44	34	150	CCOHHH	N	
31	4	19.4	4.36	0.56	92	330	CCOMMM	Y	
19	H4	28.9	4.35	0.51	219	4740	CCCOMMM	N	
56	south 3	5.6	4.29	0.16	49	640	CC		
6	R2	12.1	4.29	0.46	115	990	CCCOHHH	Y	
25	2	8.2	4.26	0.59	132	560	CCB	N	
26	1	9.8	4.26	0.69	111	325	CCCOHHH	N	
48	north	32.9	4.23	0.44	126	1220	CCCOAA		
41	1-2	50.0	4.19	-0.04	49	450	CC	Y	
29	H2	15.8	4.18	0.43	54	800	CCOHHHH	N	
35	W4	9.0	4.14	0.17	58	670	CCCOHHH	Y	
28	E2	4.0	4.07	0.47	143	1550	CCCOHHH	N	
8	JM1	12.8	4.03	0.58	153	600	CCCOHHH	Y	
26	6	19.9	4.02	0.44	41	760	CCCOHHH	Y	
26	2	12.0	4.01	0.30	46	380	CCCOHHH	Y	
6	R6	13.4	3.97	0.62	94	810	CCCOHHH	N	
44	H-8	20.1	3.95	0.23	80	1930	CC	N	
51	17	3.2	3.91	0.80	245	220	CCOHH	N	
6	B4	12.9	3.89	-0.04	73	740	CC	Y	
26	3	16.6	3.88	0.40	65	1100	CCCOHHH	N	
8	H5	6.6	3.84	0.41	51	1130	CC	Y	
19	H2	8.4	3.83	0.54	204	4915	CCCOMMM	N	
37	3	20.9	3.82	0.45	70	1400	CCCOHHH	N	
53	6-LF	15.1	3.80	0.42	55	620	CCOMMMM	N	
19	H7	20.7	3.78	0.47	105	3940	CCCOMMM	N	
30	S1	12.0	3.76	0.30	20	340	CS	Y	
41	5-7	59.1	3.74	-0.04	39	580	CC	Y	
6	R1	35.8	3.74	0.46	78	1290	CCCOHHH	Y	
28	E1	29.5	3.74	0.47	85	1230	CCCOHHH	N	

Hewitt Creek Watershed
Phosphorus Index Soil Conditioning Index Listing - 2012

FARM ID	FIELD ID	ACRES	P INDEX	SCI	SOIL TEST P	STREAM DIS	ROTATION	CONTOUR	NOTILL
34	6	12.0	3.74	0.77	175	1060	CC	Y	
48	east	33.3	3.71	0.56	151	700	CCCOAA	Y	
45	Kr-4	16.6	3.68	0.21	38	1070	CCS	Y	Y
43	S2	2.8	3.62	-0.02	56	3720	CC	Y	
29	H3	44.6	3.58	0.21	26	2890	CCOHHHH	N	
30	N2	17.3	3.56	0.25	12	300	CS	N	
51	15	11.7	3.54	0.80	207	400	CCOHH	N	
25	3	18.3	3.51	0.30	64	1360	CCB	N	
25	5	37.0	3.51	0.41	48	610	CCB	N	
43	S1	6.9	3.50	-0.02	27	3500	CC	Y	
45	H-10	10.6	3.49	0.75	133	340	CC	N	
23	80	78.5	3.46	0.41	165	1940	CC	N	
11	N2	45.6	3.45	0.09	47	2600	CCS	N	
44	H-6	23.0	3.43	0.28	56	760	CC	Y	
18	6A	9.8	3.43	0.44	40	290	CCOHHH	N	
10	5	14.8	3.42	0.63	169	1130	CCOMMM	N	
24	5	15.2	3.41	0.10	102	5200	CCS	Y	
8	B1	65.5	3.40	0.26	42	650	CCCS	N	
50	T7	4.3	3.35	0.28	34	250	CS		
6	W5	10.1	3.35	0.46	51	880	CCCOHHH	Y	
25	4	48.7	3.31	0.30	65	860	CCB	N	
3	10H	6.3	3.30	0.59	75	580	CCOHHHH	N	Y
51	18	18.1	3.28	0.79	129	600	CCOHH	Y	
53	4-LFs	11.3	3.24	0.42	45	760	CCOMMMM	Y	
19	H3	32.0	3.23	0.72	169	6620	CCCOMMM	N	
29	P2	18.4	3.19	0.45	11	510	CCOHHHH	Y	
19	S2	8.9	3.18	0.47	87	3040	CCCOMMM	N	
11	N3	44.7	3.17	0.09	47	4060	CCS	N	
24	2	17.7	3.15	0.10	68	3010	CCS	Y	
31	P	6.8	3.14	0.39	68	850	Pasture	N	Y
57	F north 3	17.0	3.13	-0.05	17	1440	CS	Y	
19	H5	22.0	3.13	0.47	109	4130	CCCOMMM	N	
57	F north 1	25.0	3.12	0.30	24	620	CC	Y	
8	JM8	13.8	3.12	0.36	60	900	CC	Y	
26	5	16.5	3.10	0.37	52	3000	CCCOHHH	N	
8	H3	45.0	3.10	0.38	50	910	CCCS	Y	
8	JM6	48.8	3.08	0.05	34	720	CC	Y	
30	N3	11.7	3.08	0.25	17	360	CS	N	
35	W3	27.9	3.06	0.51	36	410	CCCOHHH	Y	
30	S8	6.8	3.06	0.68	37	190	CCOHH	Y	
23	H-west	42.7	3.06	0.75	165	990	CC	N	
44	H-4/5	37.6	3.04	0.28	40	1150	CC	Y	
6	W3	10.4	3.04	0.46	28	1230	CCCOHHH	Y	
29	P3	10.8	3.02	0.37	18	490	CCOHHHH	Y	
6	R4	72.8	3.02	0.46	66	1510	CCCOHHH	Y	
8	JM4	38.4	3.00	0.31	56	1740	CC	N	
50	T3	35.9	2.98	0.31	34	500	CS	N	Y
18	5A2	8.7	2.97	0.44	71	1490	CCOHHH	N	
56	south 2	61.4	2.96	0.48	40	1730	CCOAAA	Y	
6	W4	41.8	2.95	0.46	42	2000	CCCOHHH	Y	
5	11	55.0	2.91	0.47	76	1540	CCCCS	Y	
35	W1	32.1	2.91	0.51	57	460	CCCOHHH	Y	
43	2b	30.7	2.90	0.27	49	2030	CCCS	Y	
35	W5	22.2	2.89	0.53	70	1270	CCCOHHH	Y	
5	12	6.6	2.89	0.63	133	6410	CCCCS	N	
5	8	25.2	2.88	0.59	79	960	CCCAAA	Y	

Targeting

Hewitt Creek Watershed
Phosphorus Index Soil Conditioning Index Listing - 2012

FARM ID	FIELD ID	ACRES	P INDEX	SCI	SOIL TEST P	STREAM DIS	ROTATION	CONTOUR	NOTILL
50	T2	46.9	1.73	0.37	18	1040	CS	N	Y
25	1	13.9	1.73	0.59	75	990	CCB	N	
30	N1	46.2	1.73	0.68	12	1140	CCOHH	Y	
16	6	8.9	1.73	0.95	54	1160	CC	Y	Y
4	52	17.1	1.72	0.39	12	590	CS	N	Y
29	P1	26.7	1.72	0.59	16	1280	CCOHHHH	Y	
34	5	4.4	1.72	0.83	63	640	CCCOAAA	Y	
24	4	44.9	1.71	0.36	49	3250	CCS	Y	
45	Kr-3	7.9	1.70	0.41	23	1610	CS	Y	Y
3	8H	9.4	1.69	0.67	53	990	CCOHHH	N	Y
8	H4	42.3	1.69	0.74	64	1720	CCCOHHH	Y	
18	5A3	4.0	1.69	0.74	53	720	CCOHHH	N	
12	2	36.6	1.68	0.72	126	2120	CS	Y	Y
45	H-1	26.7	1.66	0.72	121	510	CC	N	
16	5	6.6	1.66	0.82	54	1160	CCS	Y	Y
45	Ke-3	41.2	1.65	0.59	30	1940	CCS	N	Y
5	3	39.0	1.64	0.44	33	4870	CCCCS	Y	
8	H2	19.0	1.62	0.76	60	2390	CCCOHHH	N	
28	Bo1	36.7	1.62	0.80	64	530	CSCOHHH	N	
24	1	33.3	1.60	0.30	42	4280	CS	Y	
24	3	50.2	1.59	0.36	38	3120	CCS	Y	
34	4	5.2	1.59	0.78	51	630	CCCOAAA	Y	
56	south 1	30.0	1.57	0.79	51	800	CC		
21	4A	6.4	1.56	0.74	45	180	CCCGraze	N	N
34	7	6.1	1.55	83.00	45	560	CCCOAAA	Y	
50	P3	16.8	1.54	0.48	26	840	CC	Y	Y
45	Ke-1	35.9	1.54	0.59	26	3270	CC	N	
31	2	22.3	1.54	0.82	62	1230	CCOMMM	N	
51	12	8.2	1.53	1.10	311	320	Pasture	N	Y
28	E4	26.3	1.52	0.77	105	3600	CSCOHHH	N	
7	5-Aks	3.4	1.52	0.91	41	200	CC	N	
2	NW34 E2	5.6	1.51	0.29	10	1760	CS	N	Y
7	8A	65.5	1.51	0.57	68	1410	CC	N	
15	9A	8.2	1.50	0.81	93	1030	CCOHHH	Y	
34	1A-3	9.7	1.48	0.78	29	550	CCCOAAA	Y	
49	South	43.2	1.45	0.58	20	3890	CS	N	
58	west	51.7	1.44	0.71	46	4790	CC	Y	
55	1	7.5	1.42	0.56	69	1880	CS	N	
49	North	35.3	1.42	0.58	16	2950	CS	N	
4	JPW1	24.9	1.40	1.10	62	490	CC	N	Y
4	S3	3.8	1.38	0.47	24	560	CS	N	Y
2	west	27.5	1.34	0.59	25	990	CS	Y	Y
15	9B	13.7	1.34	0.81	63	530	CCOHHH	Y	
34	1A-4	15.0	1.34	0.97	74	1900	CC	Y	
2	NW34 west	3.5	1.33	0.35	10	2550	CS	N	Y
29	P5	16.5	1.33	0.61	18	2040	CCOHHHH	Y	
16	2	8.7	1.31	0.82	74	1200	CCS	Y	Y
2	B4	75.5	1.30	0.61	46	2350	CS	Y	Y
12	1	36.0	1.30	0.72	72	3160	CS	Y	Y
37	1A	19.8	1.27	0.68	43	2530	CCCOHHH	N	
17	middle	3.8	1.27	0.75	28	140	CS	N	Y
7	3-4A	61.3	1.26	0.74	63	960	CC	N	
56	north 3	2.6	1.25	0.87	49	100	CCOAAA		
36	H1	24.4	1.24	0.65	40	4700	CS	Y	Y
56	north 4	8.6	1.24	0.76	49	310	CCOAAA		
12	4	18.4	1.23	0.72	93	1075	CS	Y	Y

Hewitt Creek Watershed
Phosphorus Index Soil Conditioning Index Listing - 2012

FARM ID	FIELD ID	ACRES	P INDEX	SCI	SOIL TEST P	STREAM DIS	ROTATION	CONTOUR	NOTILL
4	R5	28.8	1.22	0.62	29	490	CS	Y	Y
38	D-n	47.4	1.22	0.78	42	1570	CC	N	
5	10	161.2	1.21	0.74	46	5860	CC	Y	
4	H1	101.7	1.18	0.76	73	1990	CCS	Y	Y
4	S1	74.5	1.17	0.65	38	2510	CS	N	Y
2	center	134.8	1.16	0.59	34	1280	CS	Y	Y
43	5	25.0	1.15	0.71	32	3070	CCOAAA	Y	
32	r3 s	39.1	1.15	0.79	110	3620	CS	N	Y
2	Dodge S	20.6	1.14	0.66	12	5030	CS	N	Y
33	n2	73.2	1.14	0.71	46	540	CS	Y	Y
22	1	62.4	1.14	0.71	30	1820	CS	N	Y
7	2Ae	17.2	1.14	0.73	49	1400	CCOMMM	Y	
33	n3	36.5	1.14	0.79	89	410	CS	Y	Y
1	I	53.4	1.13	0.80	113	2690	CS	Y	Y
3	5H	19.4	1.13	0.84	50	2060	CCCS	N	Y
40	South	55.2	1.12	0.62	21	2880	CS	N	
45	V-3	22.7	1.08	0.54	17	1960	CS	Y	Y
32	r2	25.0	1.08	0.71	50	540	CS	Y	Y
37	1B	19.0	1.06	0.64	25	2820	CCCOHHH	N	
3	6Hb	3.1	1.06	0.71	68	1750	CCOHHH	N	Y
45	V-2	39.9	1.05	0.67	20	840	CS	Y	Y
29	P7	13.5	1.05	0.71	19	1500	CCOHHHH	N	
36	H2	71.6	1.05	0.75	40	6700	CS	N	Y
51	13	13.8	1.04	1.10	201	440	Pasture	N	Y
44	T-2	77.6	1.02	0.77	13	1200	CS	N	Y
33	n1	78.5	1.02	0.88	33	780	CS	N	Y
28	E3	11.9	1.00	0.73	100	1800	Pasture	N	Y
16	1	10.2	1.00	0.97	87	900	CC	Y	Y
1	II	58.0	0.99	0.72	48	2300	CS	Y	Y
12	3	12.8	0.98	0.72	66	1430	CS	Y	Y
2	Dodge N	18.0	0.97	0.83	22	4490	CS	N	Y
22	2	8.6	0.96	0.71	23	1120	CS	Y	Y
4	JPE4	33.3	0.96	1.10	105	1580	CC	N	Y
38	D-m1	23.6	0.95	0.47	47	560	CS	N	
17	north	7.0	0.95	0.69	25	520	CS	N	Y
7	1A	19.0	0.95	0.74	16	350	CC	N	
40	North	61.9	0.93	0.62	16	3810	CS	N	
3	4H	21.2	0.93	0.75	42	4520	CCCS	Y	Y
14	a7	47.3	0.92	0.71	15	750	CS	Y	Y
32	r1	82.3	0.91	0.71	38	1590	CS	Y	Y
4	S4	11.8	0.91	1.10	13	430	CC	N	Y
16	4	21.1	0.90	0.82	49	1440	CCS	Y	Y
5	2	36.3	0.90	0.87	54	2300	CCCCS	Y	
50	T6	5.4	0.89	0.66	21	500	CS	N	Y
38	D-s	29.3	0.88	0.48	26	520	CS	N	
50	P2	27.9	0.88	0.58	25	1000	CC	Y	Y
44	T-3	52.8	0.87	0.75	10	1760	CS	N	Y
27	NE-2	25.2	0.86	0.63	12	4070		N	
17	south	21.1	0.85	0.69	28	380	CS	N	Y
34	1A-1b	16.6	0.84	0.70	51	920	CC	Y	Y
14	a2	16.8	0.84	0.71	13	400	CS	Y	Y
38	D-m2	6.3	0.83	0.72	50	320	CS	N	
15	4	2.2	0.83	1.10	90	310	CC	Y	Y
4	R4	33.1	0.82	0.79	31	1200	CS	N	Y
50	P4	3.8	0.81	0.48	8	1250	CC	Y	Y
36	N2	22.4	0.81	0.65	17	480	CS	Y	Y

Targeting

Approved 1/24/12

2012 HEWITT CREEK PERFORMANCE-BASED FARM and WATERSHED ENVIRONMENTAL MANAGEMENT PROGRAM

Please check activities you wish to complete. (Deadline April 1/first-come subject to funding). [Payments near July 1 and December 1 may be prorated if participation exceeds $45,000].

PHOSPHORUS INDEX (PI) Maximum $10.00/A. See P Index explanation on back of this page.

____$500 first year payment if the weighted whole farm P Index is less than a phosphorus loss risk of 3 (2-5 is medium risk). All field scores weighted by the field size and risk of P loss from each field to attain a weighted average farm P-index.

____$100 paid for annual data and P-index review after the first year.

____$150 bonus if the P-index is 2 or less (low) or for each 0.3 reduction in P Index.

____$10 per management area or field tested for soil test P, at least 10 acres per sample (max 4/yr for 5 years). Not to be included with grid sampling.

SOIL CONDITIONING INDEX (SCI) Maximum $10.00/Ac. See back for SCI explanation.

____$200 first year payment per 0.1 SCI above 0 for whole farm weighted average of all fields. Example: A weighted average farm SCI of 0.4 will provide a payment of $800.

____$100 per 0.1 SCI for annual data and SCI review after the first year.

____$200 paid for each 0.1 improvement in the annual SCI.

NITROGEN PERFORMANCE MANAGEMENT (Corn Stalk Nitrate-Nitrogen analysis)

____$400 payment if the farm weighted average analyses does not exceed 1,700ppm.

____$200 bonus if the weighted average (Max. 50 acres/field) is less than 1,300ppm.

____$100 for the first two NO_3N samples and $40 for each additional sample (max 4 samples).

Targeting Performance

OTHER INCENTIVES

____$200 First time manure application calibration and manure analysis.
____$50 Additional manure analyses taken and results reported by project cooperators (first time calibration required).
____$20 Per acre up to 40 acres for fall cover crop on corn silage or soybean stubble.
____$300 Grid sampling and variable rate fertilizer application (40 acres/year for 5 years).
____$200 Install a below-feedlot grass filter, pre-lot water diversion or roof gutters.
____$200 Managed grazing (5 or more paddocks).
____$200 Septic system up-grade. Low interest revolving fund loans available (515-242-6043).
____$200 Farmstead or Streambank Assessment (first time self assessment or changes-improved assessment).
____$0.50/ft., maximum 1,200 ft., new, repaired or reconstructed waterways, headlands, or buffers, minimum 30' width. Must be maintained for 5 years, may be hayed or grazed, minimum 25# brome/acre or comparable seeding.
____$200 Install fabric during waterway installation and repair.
____$2000 New or improved feedlot runoff controls –consulting with Extension Ag Engineer.

WATERSHED ENVIRONMENTAL PERFORMANCE

____$200 Bonus for achieving 85% of the land in the watershed enrolled in performance program. Payable to cooperators earning $500 or more watershed improvement incentives per farm operation.

_____ _____ _____
Name Address Phone

_____ _____
Email address Cell Phone

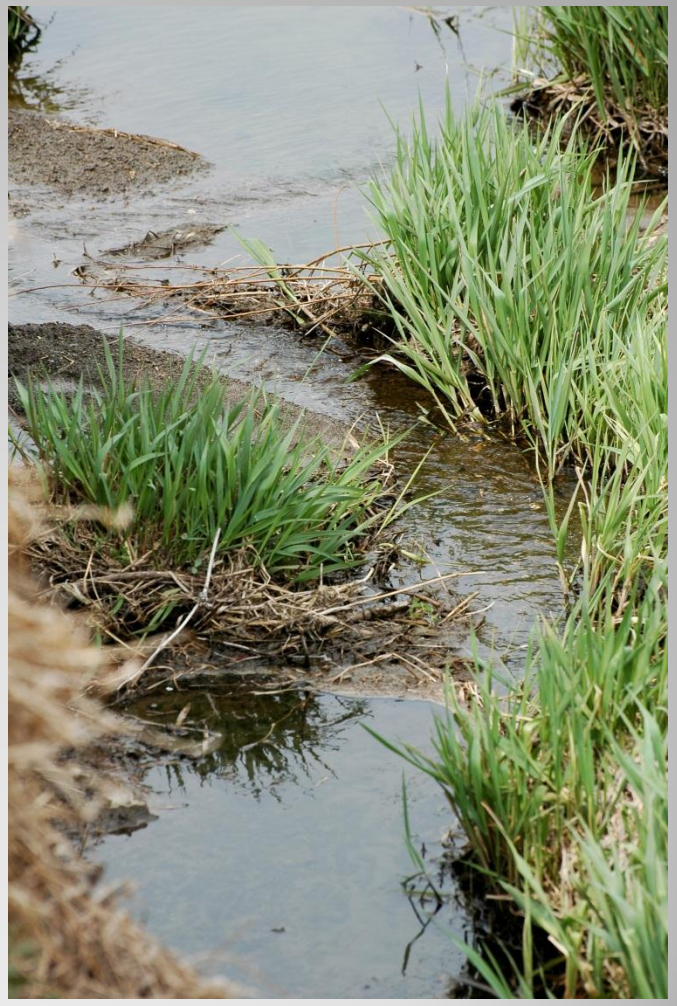
Targeting Performance

Iowa Phosphorus Index

- Soil loss
- Distance to stream
- Soil test P
- Management practices
- P application
- Drainage

A measure of the risk of phosphorus loss to the environment

Measured on a scale of 0 to >15 with lower being better



Performance

Soil Conditioning Index

- Soil map unit
- Tillage practices and timing
- Crop rotation
- Yield level
- Management practices
- Manure applications

Measured on a scale of -1 to 1.1 with higher being better

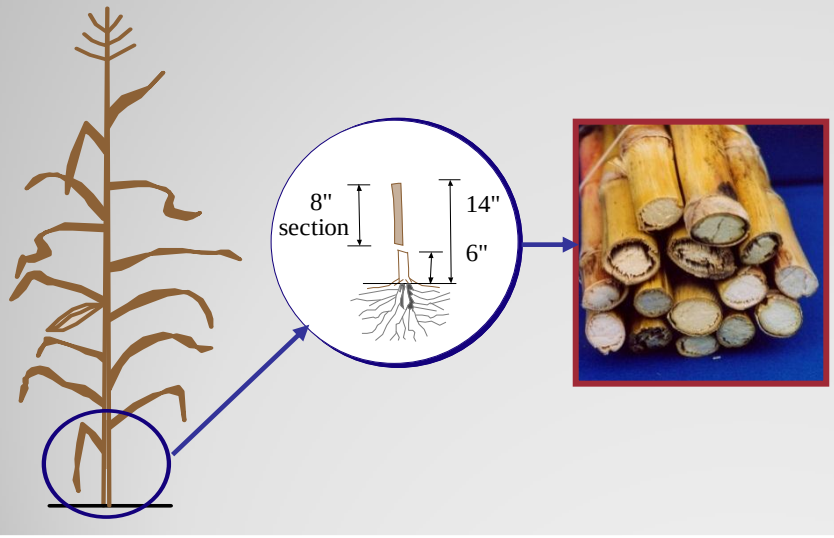
Positive values predict increase in organic matter

Performance

Fall Cornstalk Nitrate Test

Measures amount of nitrate remaining in the corn plant at maturity

Plants with inadequate N remove N from the lower cornstalk and leaves during grain fill



Performance

PI Category	# of fields	total acres	avg. PI	avg. SCI	avg. soil P	avg. distance	% hay/graze	% contour	% no till
>5	13	204	5.98	0.16	109	932	69	46	0
3 to 5	89	2115	3.77	0.33	86	1398	58	45	4
2 to 3	98	2610	2.46	0.48	58	1855	61	49	11
1 to 2	108	3122	1.40	0.82	49	2312	41	47	45
0 to 1	65	1630	0.76	0.76	33	1748	6	38	85
No PI	21	531		0.46		1786			
	394	10,212							
2012 Watershed Weighted Average			2.19	0.59	58	1861	44	44	31
>5	14	259	5.96	0.18	115	888	64	36	0
3 to 5	95	2331	3.73	0.30	84	1460	55	45	1
2 to 3	102	2603	2.45	0.48	57	1670	59	53	5
1 to 2	112	3346	1.41	0.80	46	2303	39	43	34
0 to 1	59	1428	0.75	0.75	29	1607	7	37	80
No PI	13	252		0.51		2414			
	395	10,219							
2011 Watershed Weighted Average			2.25	0.58	57	1819	44	44	24
>5	18	385	6.00	0.10	98	824	61	50	0
3 to 5	103	2485	3.73	0.32	83	1413	53	45	3
2 to 3	94	2347	2.45	0.51	59	1694	60	55	5
1 to 2	100	3126	1.44	0.80	47	2373	41	42	32
0 to 1	55	1313	0.74	0.75	32	1677	9	40	84
No PI	13	253		0.53		2383			
	383	9,910							
2010 Watershed Weighted Average			2.36	0.57	59	1820	44	45	23
2008 Watershed Weighted Average			2.41	0.53	60	1821	45	49	22
2007 Watershed Weighted Average			2.54	0.51	60	1785	47	48	19
2006 Watershed Weighted Average			2.48	0.54	63	1741	54	50	19

Evaluation

Evaluation

NORTH FORK CORNSTALK NITRATE TEST RESULTS -- 2009

ID	Sample #	Stalk NO3-N (ppm)	Nitrogen application	Estimated N (lbs/a)	Rotation	Yield (bu/a)
24	4	5,900	190# 28% Spring	190	CC	148
1	4	5,640	160# NH3 spring, 15 ton solid manure	236	CC	211
19	1	5,210	150# 28% Spring,	150	CC	197
19	4	4,650	105# 28% Spring, 3000 gal liquid hog spring	218	CC	223
12	1	4,256	140# 28% spring, 36# DAP spring (poorer stand than comparison)	176	CC	151
4	2	4,120	15# urea spring, 11,000 gal liquid dairy injected Fall	225	CB	217
4	3	4,040	15# urea spring, 11,000 gal liquid dairy injected Fall	225	CC	193
32	3	3,890	28%, Extra Fertilizer Spring, Manure History		CC	181
20	1	3,870	90# 28% spring, 60# 28% side dress	150	CC	187
17	3	3,750	125# 28% Spring, 7.5 ton/acre steer manure	163	CC	203
19	2	3,400	150# 28% Spring,	150	CC	151
4	1	3,250	100# Anhydrous and 15# urea Spring	115	CB	205
8	1	3,240	130# encapsulated urea Spring	130	CB	193
25	2	3,214	45# 28% spring, 35 ton/a free stall manure	221	CC	181
23	2	3,170	135# urea spring (40# P & 60#K)	135	CB	190
15	3	3,137	25# urea @ planting, 50# 28% side-dress, 60 ton/a spring manure	342	CC	168
16	3	3,000	60# 28% side-dress, 2 ton/a dry fall manure, 3000 gal sping manure	217	CC	208
25	5	2,980	45# 28% spring, 12,000 gal liquid dairy spring manure	207	sod-C	181
17	2	2,870	50# 28% Spring, 4000 gal liquid hog	200	CB	187
33	2	2,840	120# Anhydrous spring	120	CB	203
1	1	2,760	160# NH3 spring	160	CC	210
2	2	2,590	150# 28% Spring, 4000 gal liquid dairy spring	209	CC	182
25	6	2,436	30# 28% spring, 12,000 gal liquid dairy spring manure	192	sod-C	176
20	3	2,350	60# 28% spring, 60# 28% side dress	120	CB	209
12	2	2,293	140# 28% spring, 36# DAP spring	175	CC	171
13	3	2,280	110# 28% spring	110	CB	181
32	1	2,090	28%, Foliar Feed in Spring/Summer		CC	175
1	2	1,980	160# NH3 spring, 15 ton solid manure	236	CC	181
2	1	1,970	150# 28% Spring, 4000 gal liquid dairy spring	209	CC	205
22	2	1,860	90# 28% spring, 90# urea spring	180	CC	211
23	3	1,860	170# urea spring (no P & K)	170	CC	175
15	2	1,835	25# urea @ planting, 50# 28% side-dress, 60 ton/a fall manure	342	CC	184
16	4	1,806	40# 28% side-dress, 5500 gal fall/spring manure	329	BC	211
15	4	1,533	25# urea @ planting, 50# 28% side-dress, 60 ton/a fall manure	342	sod-C	170
16	2	1,500	40# 28% side-dress, 5500 gal fall/spring manure (heavy lodging)	309	sod-C	176
25	4	1,488	45# 28% spring, 12,000 gal liquid dairy fall manure	207	CC	170
16	1	1,469	40# 28% side-dress, 2 ton/a dry fall manure, 3000 gal sping manure	197	CC	
29	4	1,380	10 gal 28% starter spring, 6 ton/acre dairy and 100 gal hog manure sea	78	C-hay	204
20	2	1,350	60# 28% spring, 60# 28% side dress	120	CB	223
25	7	1,337	15# 28% spring, 12,000 gal liquid dairy spring manure	177	sod-C	182
25	8	1,316	12,000 gal liquid dairy spring manure	175	sod-C	181
29	2	1,300	140 # Anhydrous Spring, 10 gal 28% starter spring, 6 ton/acre dairy anc	218	CC	204
24	2	1,250	160# 28% Spring	160	CC	199
6	2	1,250	60# Ammonium Sulfate Fall, 14 ton/a shed manure seasonal	131	CC	193
22	4	1,220	90# 28% spring, 90# urea spring	180	CC	203
1	3	1,170	160# NH3 spring, 10,000 gal pit manure	295	CC	204
17	1	1,150	125# 28% Spring, 10,000 gal liquid hog	500	CC	196
23	1	1,110	170# urea spring (30# P & 40#K)	170	CC	182
6	1	1,050	60# Ammonium Sulfate Fall, 14 ton/a shed manure seasonal	131	CC	210
29	1	1,010	140 # Anhydrous Spring, 10 gal 28% starter spring, 6 ton/acre dairy anc	218	CC	182
25	1	983	60# 28% spring, 15,000 gal liquid dairy fall manure, fall cover crop	252	CC	180
11	2	805	60# urea w/planter, 15 tons shedded manure	136	CC	199
32	2	802	28% Spring		CB	180
19	3	770	60# 28% Spring, 5860 gal liquid hog fall	280	CC	203
33	1	710	140# NO3N Spring	140	C-sod	201
24	1	613	120# 28% Spring	120	CB	187
6	3	580	60# Ammonium Sulfate Fall, 14 ton/a shed manure seasonal	131	CC	201
13	2	571	110# 28% spring	110	CB	180
25	3	557	45# 28% spring, 35 ton/a free stall manure	221	CC	175
7	2	513	30# 28% Spring, 4000 gal liquid hog manure October 08.	204	CB	203
13	1	502	110# 28% spring	110	CB	181
29	3	470	140 # Anhydrous Spring, 10 gal 28% starter spring, 6 ton/acre dairy anc	218	CC	187
22	1	451	90# 28% spring,	90	C-sod	229
3	1	450	100# Urea, 10 ton/acre Dairy free stall manure	154	CB	198
22	3	439	90# 28% spring, 50# urea spring	140	CB	179
23	4	423	135# urea spring (40# P & 60#K)	135	CB	185
15	1	412	25# urea @ planting, 50# 28% side-dress, 60 ton/a winter manure	342	CC	180
7	1	374	30# 28% Spring, 4500 gal liquid hog manure November 08.	225	CB	198
8	4	356	130# encapsulated urea Spring	130	CB	182
8	2	345	130# encapsulated urea Spring	130	CB	218
3	2	315	100# Urea, 10 ton/acre Dairy free stall manure	154	CB	204
35	3	291	160# 28% Spring	160	CC	184
24	3	289	190# 28% Spring	190	CB	181
18	1	284	70 gal 28% Spring (196 wt), 3000 gal liquid hog	309	CC	193
2	3	283	No N or Manure	0	C-sod	154
18	2	276	62 gal 28% Spring (175 wt), 3000 gal liquid hog	288	CC	193
11	1	276	60# urea w/planter, 15 tons shedded manure	136	CC	217
11	4	262	60# urea w/planter, 15 tons shedded manure	136	C-pasture	193
32	4	251	28% Spring		CC	176
35	1	229	120# 28% & Foliar Spring	120	CB	174
11	3	218	60# urea w/planter,	60	CC	181
6	4	217	60# Ammonium Sulfate Fall, 14 ton/a shed manure seasonal	131	CC	175
8	3	216	130# encapsulated urea Spring	130	CB	176
35	4	208	120# 28% & Foliar Spring	120	CB	144
35	2	207	160# 28% Spring	160	CC	163
24	**85**	**1,663**		**185**		**189**

	2005	2006	2007	2008	2010	2011
Phosphorus Index	$1,230	$13,400	$7,195	$7,830	$5,240	$7,015
Soil Conditioning Index	$0	$31,612	$17,835	$16,013	$18,710	$16,292
Nitrogen Performance	$1,945	$6,650	$8,560	$3,930	$9,120	$6,900
Other incentives	$20,465	$17,230	$9,725	$9,343	$12,700	$17,595
Watershed Performance	$0	$0	$5,700	$4,200	$0	$0
Total Incentives	**$23,640**	**$68,892**	**$54,765**	**$46,226**	**$45,770**	**$47,802**
No. of Cooperators	**33**	**38**	**47**	**50**	**52**	**56**

Evaluation

- 30% reduction in stream nitrate
- Watershed average IPI improved from 2.48 to 2.19
- Installation and improvement of 150,000 feet of grassed waterways and vegetative buffers
- Family Biotic Index improved: 5.83 (fairly poor) to 4.74 (good)

Evaluation - Outcomes

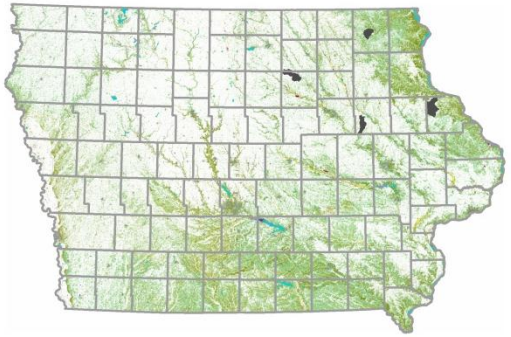
Evaluation - Outcomes

- Watershed participation exceeds 75%
- 19% reduction in stream nitrate with 2 years consecutive years less than 10 mg/L
- 10,500 tons reduction of sediment delivery
- Watershed average IPI improved from 2.70 to 2.18
- 3 denitrifying bioreactors installed

Upper Iowa River Watershed

Dry Run Creek

Coldwater-Palmer



Cedar River Watershed

North Fork Headwaters

Hewitt Creek

Lime Creek

Maquoketa River Watershed

Resident Leadership

Questions